How to recover a blocked Azbox only displaying: Booting…

If your Azbox is no longer responding and it is stucked with Booting... in the front display, it is normally possible to recover it but you will need to purchase an adapter cable, USB (RS232) to TTL.

Thanks to *andressis2k and VVK to Herbie* and to *Hectore* and to all the other people that contribute to this solution.

CAUTION: USE AT YOUR OWN RISK, we didn't take any responsibility about this procedure. It is given as is.

Pre-requisite : hardware needed.

You need a convertor UART TTL to serial/USB, since serial port tend to disappear on PC, I look for an USB adapter. I find it on eBay:

http://cgi.befr.ebay.be/ws/eBayISAPI.dll?ViewItem&item=180573940440&ssPageName=STRK:MEWNX:IT

Seller on eBay	Ynhstore8 : http://myworld.befr.ebay.be/ynhstore8/
Object description	USB 2.0 to UART TTL Serial Converter w/ Protective Case
Price	around 5€

The provided CD-Rom doesn't work on Windows 7, so go to this site to download the latest driver version:

http://www.silabs.com/products/mcu/pages/usbtouartbridgevcpdrivers.aspx

There is different models available on eBay, I choose one with a case.

I also order this model (I am waiting delivery) which seems more easy, since we got everything:

Seller on eBay	cw7406 : http://myworld.befr.ebay.be/cw7406/
Object desc	2 x Adaptateur Convertisseur PL2303/USB/TTL/RS232 Câble
Price	Around 12€ but for 2 cables!

So this model is not yet tested:

http://cgi.befr.ebay.be/ws/eBayISAPI.dll?ViewItem&item=320613674539&ssPageName=STRK:MEWAX:IT#ht_3907wt_1002

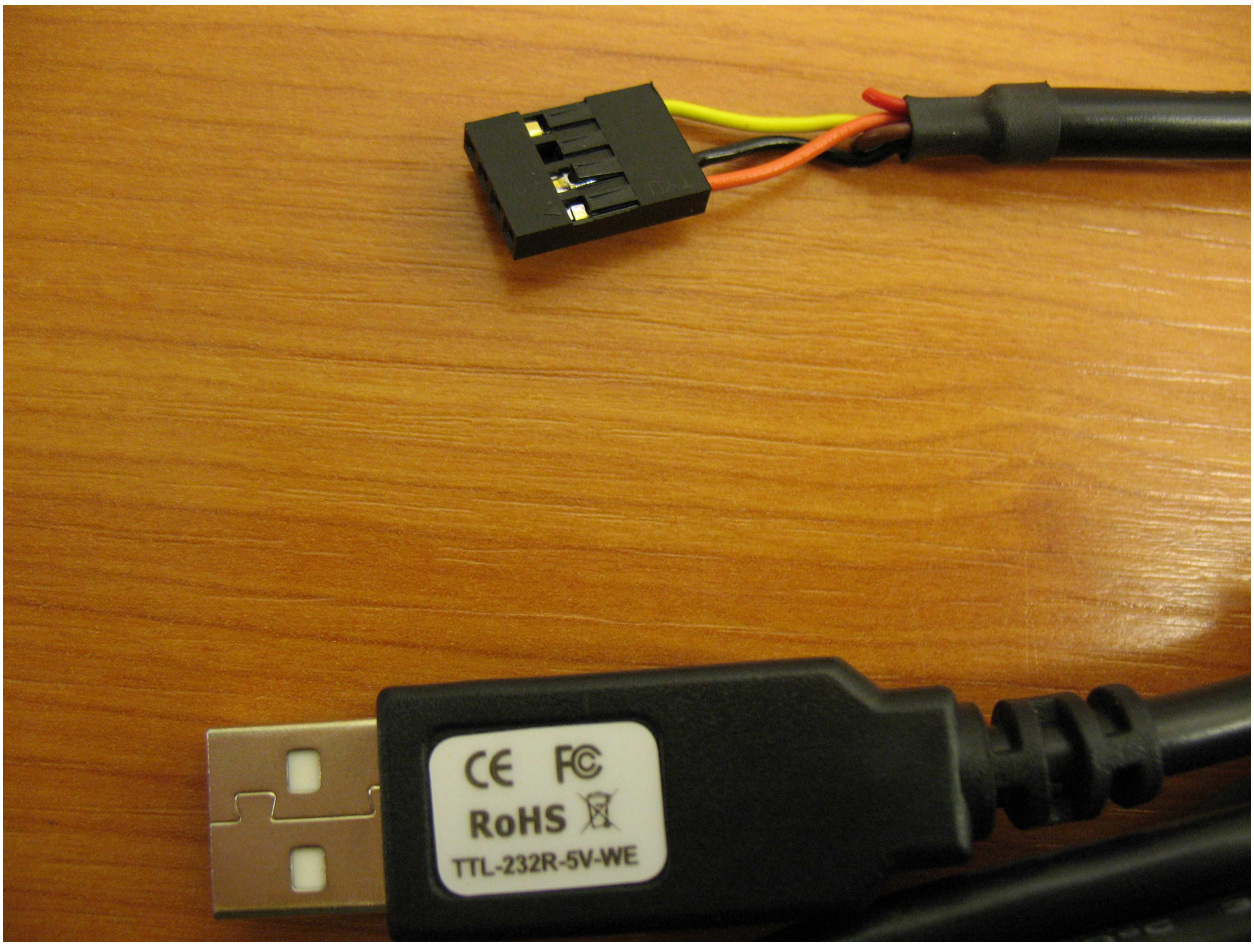
Black -> GND, Green -> TXD, White → RXD, Red → +5V

USB Serial Cable + Small Line
Chip Prolific PL2303HX

Driver: http://www.prolific.com.tw/eng/downloads.asp?ID=31

Price may seems higher than the other model, but with the first one you need to build the cable and find the connectors so at the end both solutions are equivalent.

Here is a reference of another cable tested successfully: TTL232R-5V-WE



Cable creation:

The adapter looks like:

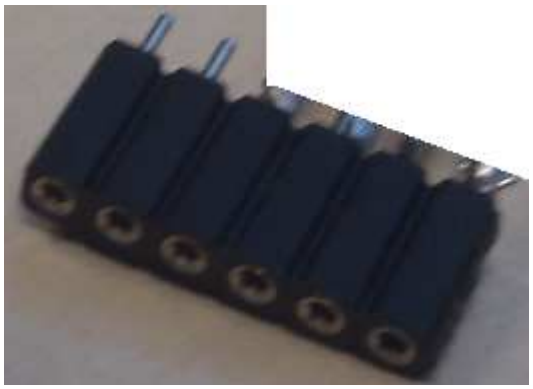
There are 6 PINS:

PIN	Function
+5V	Power supply output 5V
GND	Ground
RXQ	Receive Data
TXQ	Transmit Data
RST	Reset
3.3V	Power supply output 3,3V

We will only use the 3 pins highlighted in yellow.

Be carefull the RX from the adapter goes to the TX of the Azbox and the TX from the adapter goes to the RX of the Azbox.

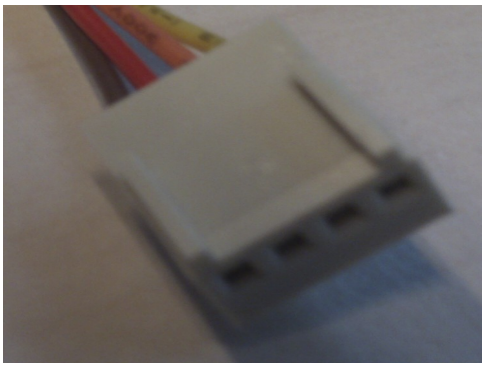
In an electronic specialize shop I found this connector, we cut it with the number of connector that we want:



This one perfectly fit on the adapter USB / TTL.

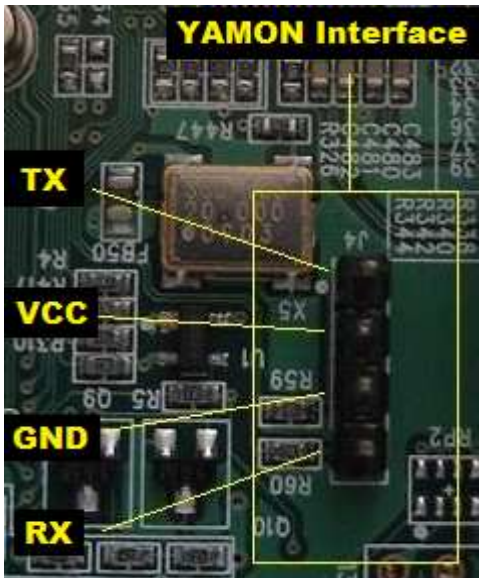
Remark: I hide the cable color that I use to avoid confusion (see later in this document).

The same kind of connector can also be used on the Azbox side, mais as safety mesure, I choose to use another connector type to avoid confusion.



This is a very common connector. This one doesn't fit properly on the USB/TTL adapter, it fits only in the Azbox.

The connector to access Yamon looks like this on the motherboard:



Connector on the Azbox side	Connector on the USB/TTL adaptor
TX [Brown]	**RX**
VCC ***DO NOT CONNECT***	***DO NOT CONNECT***
GND [Orange]	**GND**
RX [Yellow]	**TX**

Just as indication I give you the wire colors that I use on the Azbox side since this connector is quite common and it is sold with the wires.

Be carefull: there is no keyed possible on the Yamon interface so you can connect you cable in the right but also in the wrong way and this can damage your Azbox. So you should be very careful and remember how you build your cable. On the Azbox motherboard there is a dot near the TX pin, this gives you an indication on how to connect the cable (see later on for detailed photos).

My tip, is to use the red wired (not used) has the one for the VCC. It is just a way to remind how the cable is build and where the RX of the cable is.

Softwares pre-requisite:

Putty.

Putty is a terminal emulator which also support serial connections.

Since most of us already use Putty we already have it installed.

http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html

Download link: http://the.earth.li/~sgtatham/putty/latest/x86/putty.exe

There is no need to install Putty, simply download it somewhere on your PC and launch it.

TFTP server.

You will need a TFTP server on your PC, I use Pumpkin.

http://kin.klever.net/pumpkin/

Download link: http://kin.klever.net/pumpkin/binaries

Possible alternative: http://tftpd32.jounin.net/

Download link: http://tftpd32.jounin.net/tftpd32_download.html (this one has a 64 bits version).

FileZilla

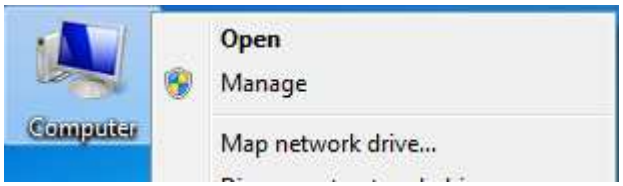
You will need a FTP client:

http://filezilla-project.org/

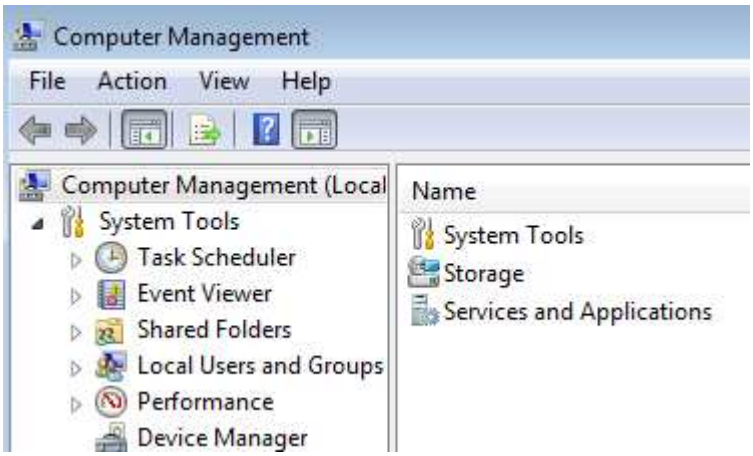
Download link: http://filezilla-project.org/download.php?type=client

adapter USB/TTL driver installation and configuration.

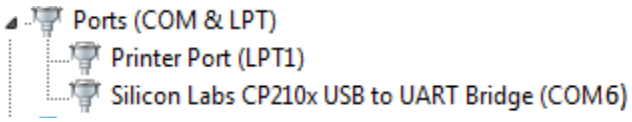
You should install the driver on your PC and check that they are properly working (no error message on Windows).



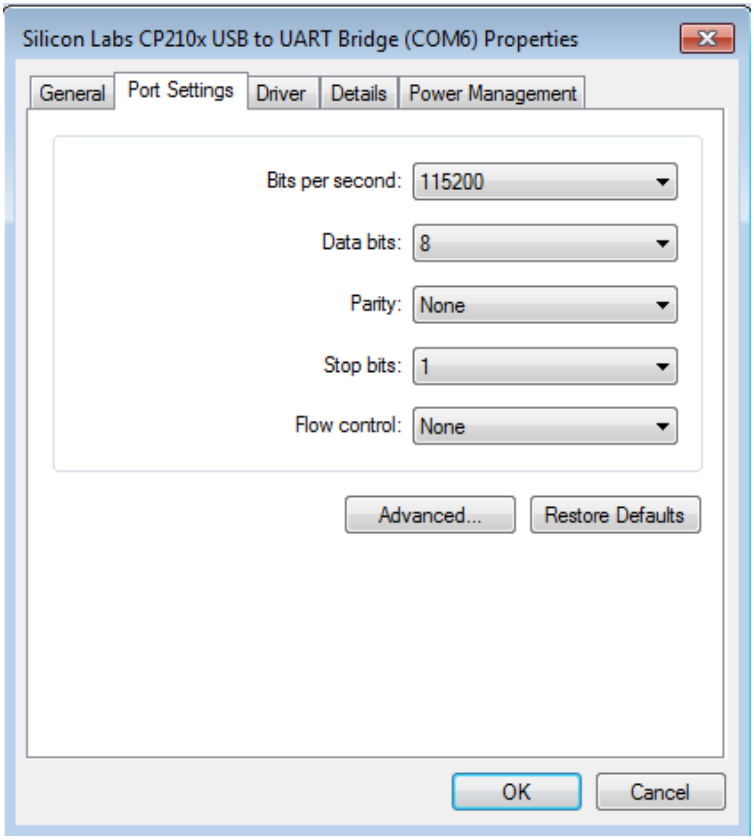
Right click on My Computer , and select **Manage** option.



Click on **Device Manager.**



In the list that appears select the Ports (COM and LPT) and double click on Silicon Labs CP210x USB to UART Bridge, please write down the port number assigned in this example (COM6) This value can also be different on your PC.



Open the Parameters tab of this port and configure it like like on the screenshot above.

Normally only the port speed needs to be changed by Bits per seconds : **115200**

Press OK.

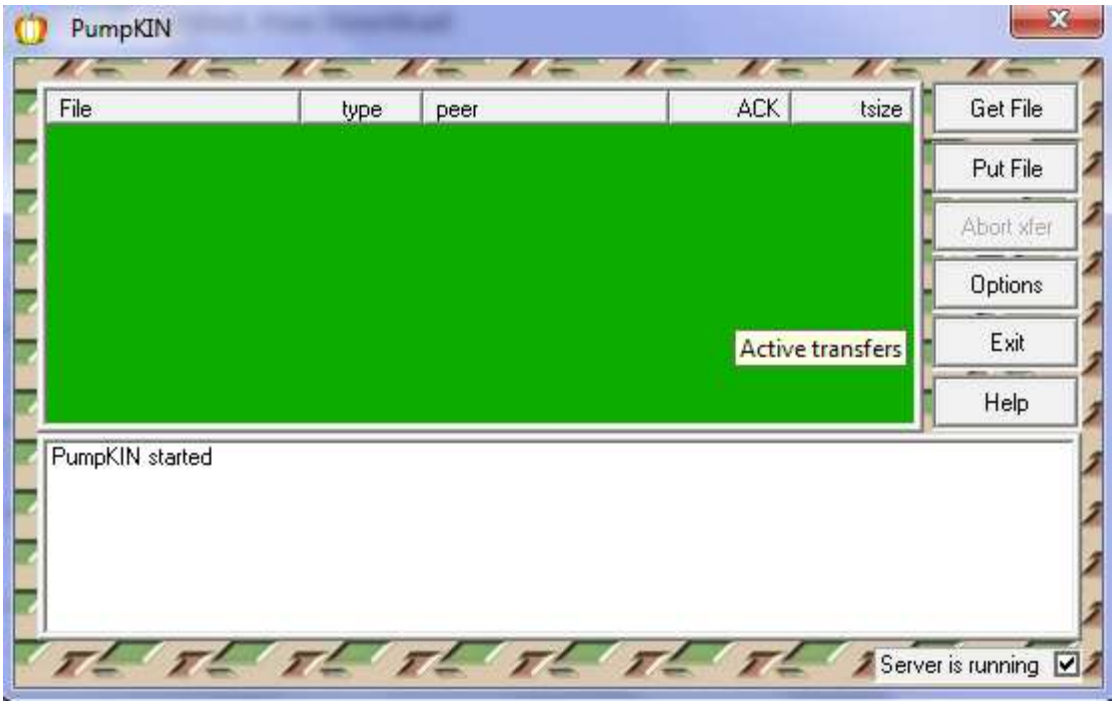
Starting the TFTP.

In the pack that come with this tutorial, you have the Files folder, you need to configure your TFTP server to use this folder.

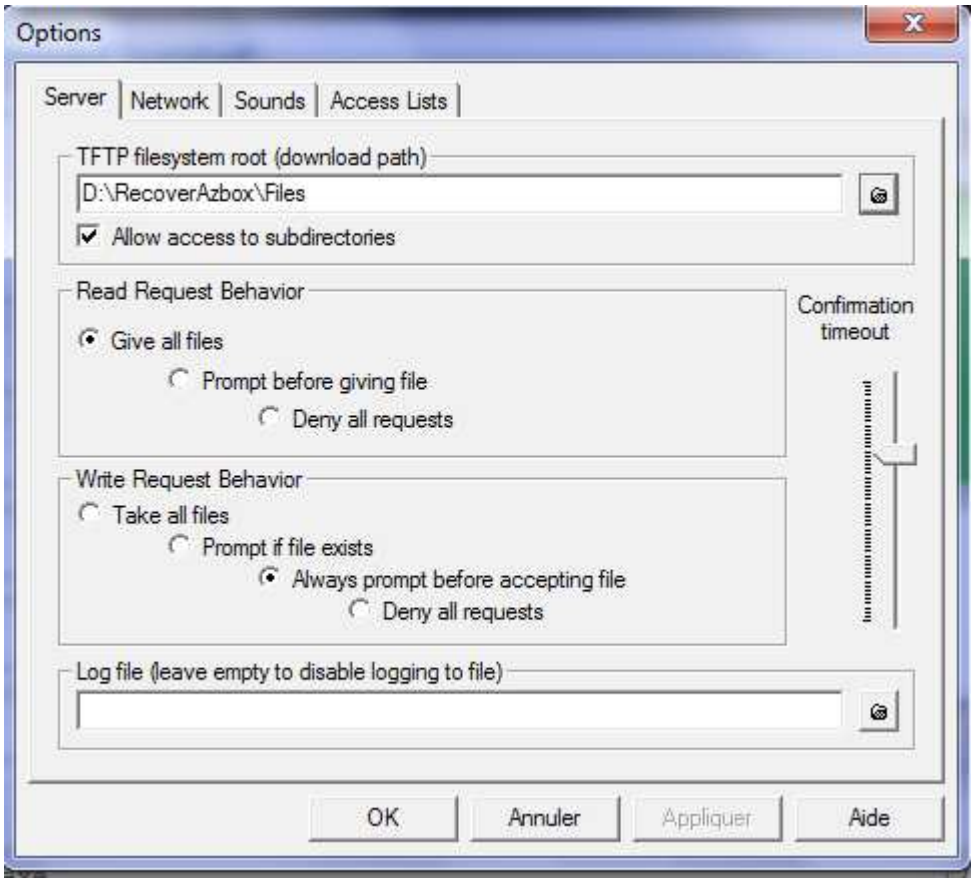
Start PumpKIN and at the first start you will have:

Windows Security Alert
Windows Firewall has blocked some features of this program
Windows Firewall has blocked some features of PumpKIN, tftp client/daemon on all public and private networks.
Name: PumpKIN, tftp client/daemon
Publisher: Klever Group (http://www.klever.net/)
Path: C:\program files\klever\nothings\pumpkin.exe
Allow PumpKIN, tftp client/daemon to communicate on these networks:
Private networks, such as my home or work network
Public networks, such as those in airports and coffee shops (not recommended because these networks often have little or no security)
What are the risks of allowing a program through a firewall?
Allow access
Cancel

You need to Allow access..



Press Options button:



In the field TFTP filesystem root (download path) set the Files folder location (the easiest way is to click on the folder icon and browse yout folder to point out the right one).

Then select the Give all files and push OK.

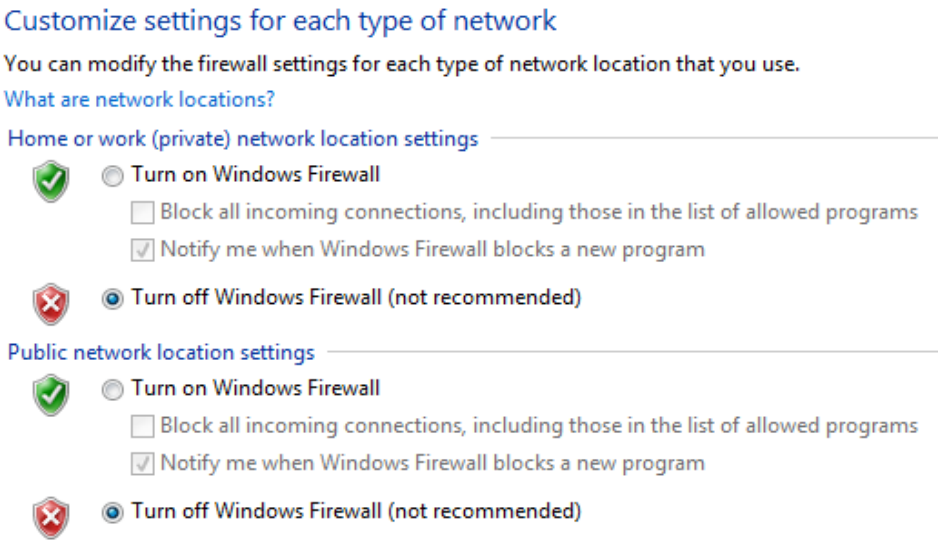
Disabling Windows Firewall (or any other).

To avoid many problems it is important that you disable the Firewall that is active on your PC.Here is how to disable the Windows Firewall. Goto **Control Panel → System and Security**

Select **Windows Firewall:**

The select: **Turn Windows Firewall on or off.** (on the left pane)

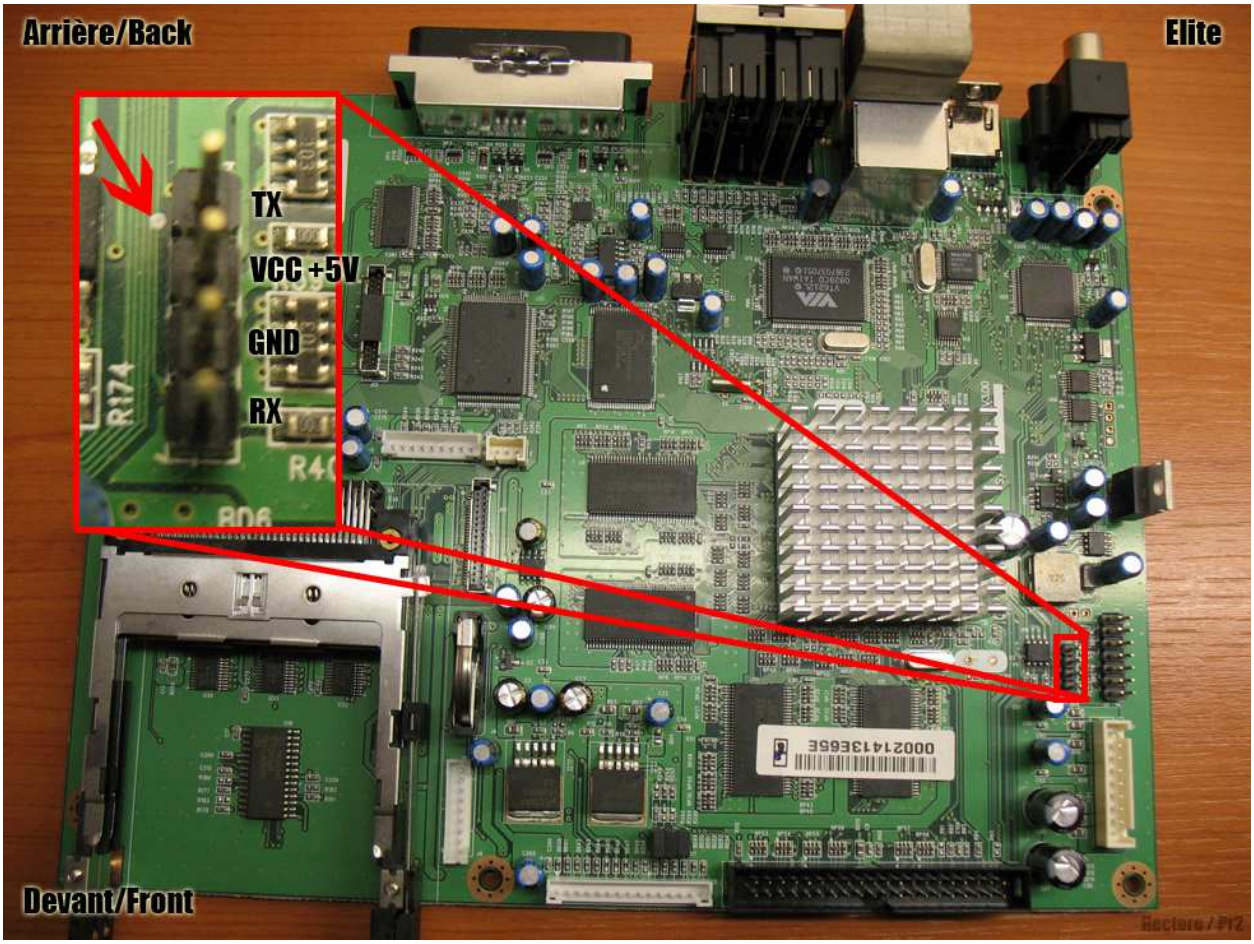
And disable the Firewall.


Customize settings for each type of network
You can modify the firewall settings for each type of network location that you use.
What are network locations?
Home or work (private) network location settings
Turn on Windows Firewall
Block all incoming connections, including those in the list of allowed programs
Notify me when Windows Firewall blocks a new program
Turn off Windows Firewall (not recommended)
Public network location settings
Turn on Windows Firewall
Block all incoming connections, including those in the list of allowed programs
Notify me when Windows Firewall blocks a new program
Turn off Windows Firewall (not recommended)

Press OK to validate.

How to connect the cable on the Azbox motherboard:

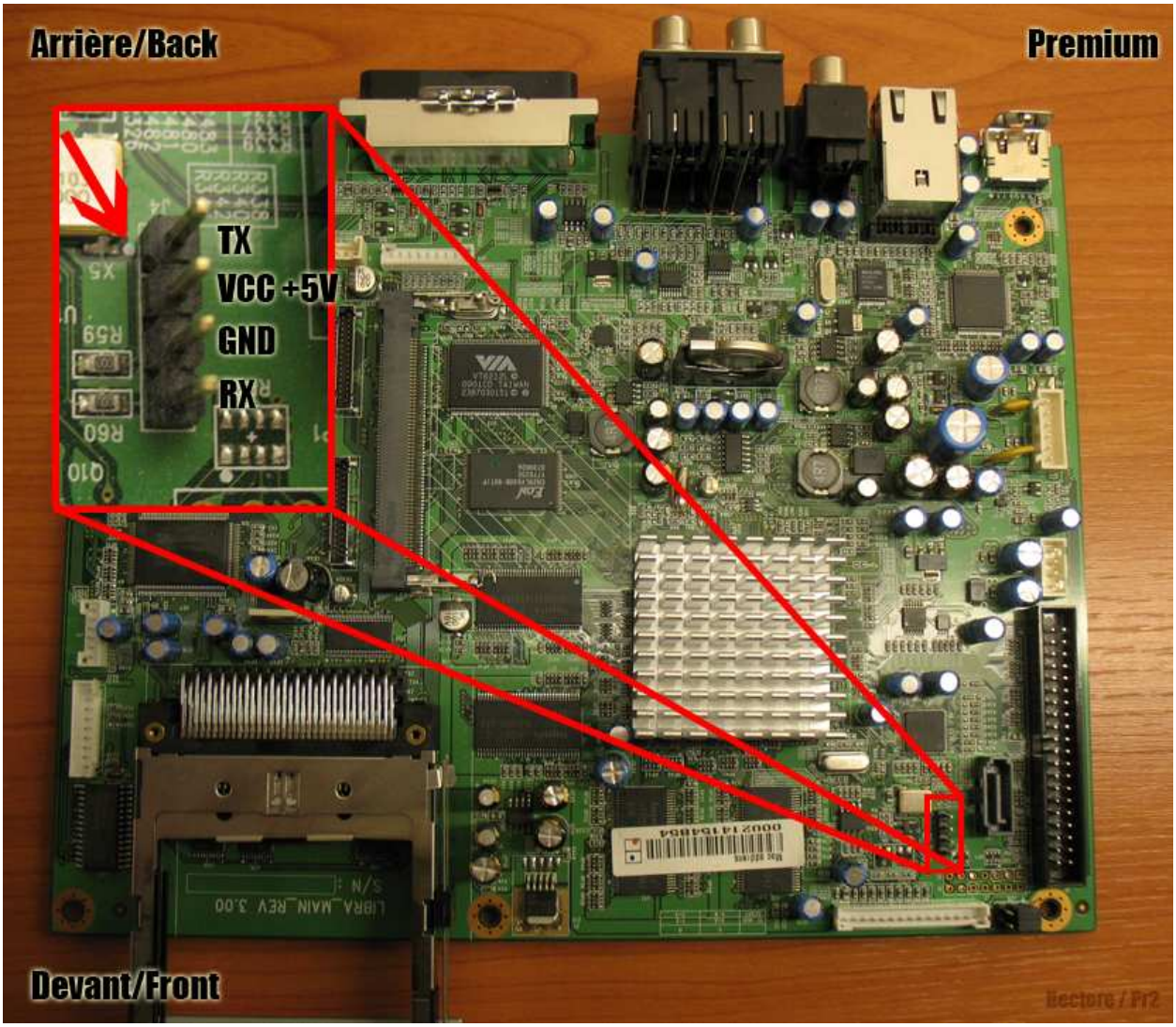
Elite:



Carefully check for the dot on the motherboard it indicates the TX pin of the connector.

Remember that you need to connect this TX pin to the RX of your adapter

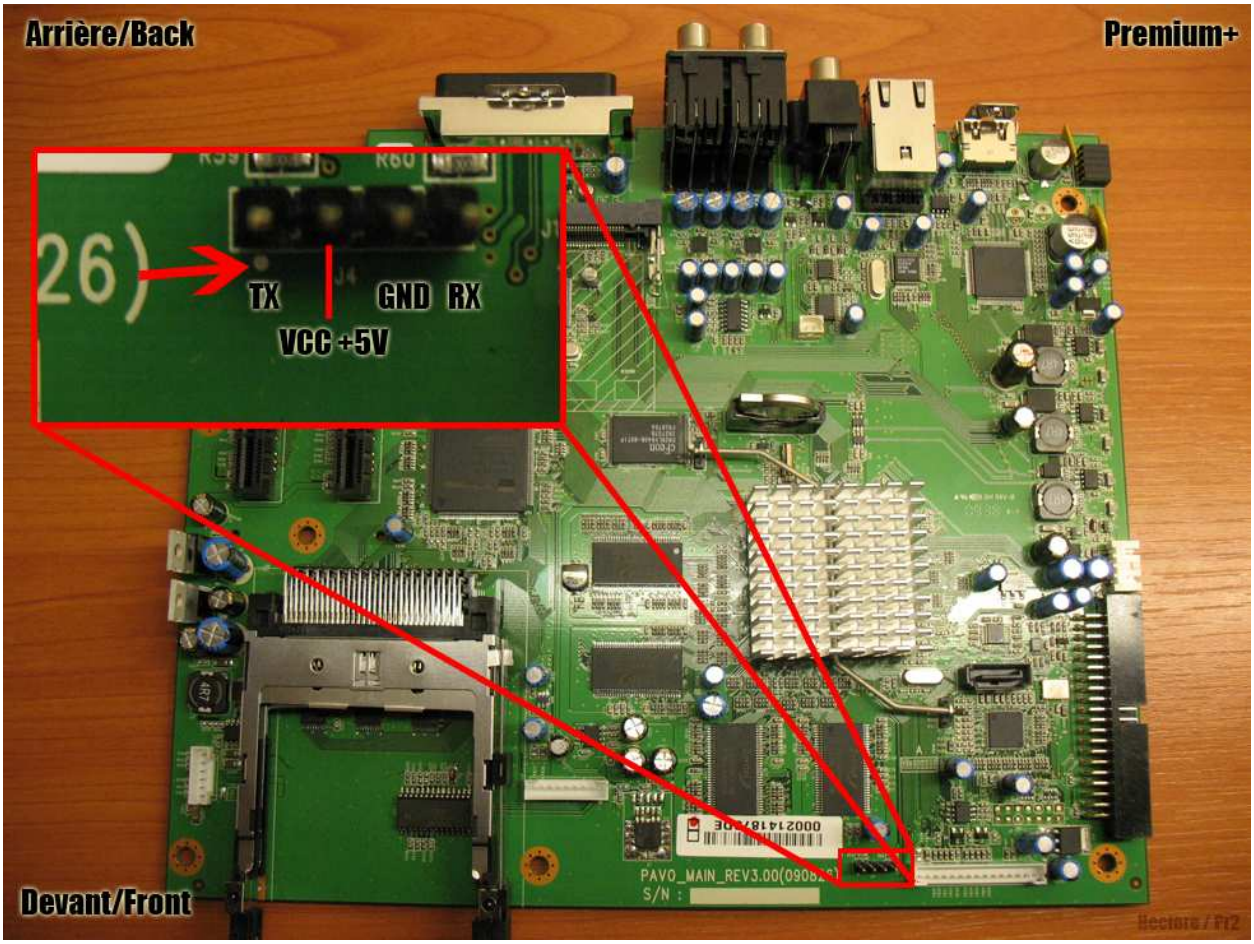
Premium:



Carefully check for the dot on the motherboard it indicates the TX pin of the connector.

Remember that you need to connect this TX pin to the RX of your adapter

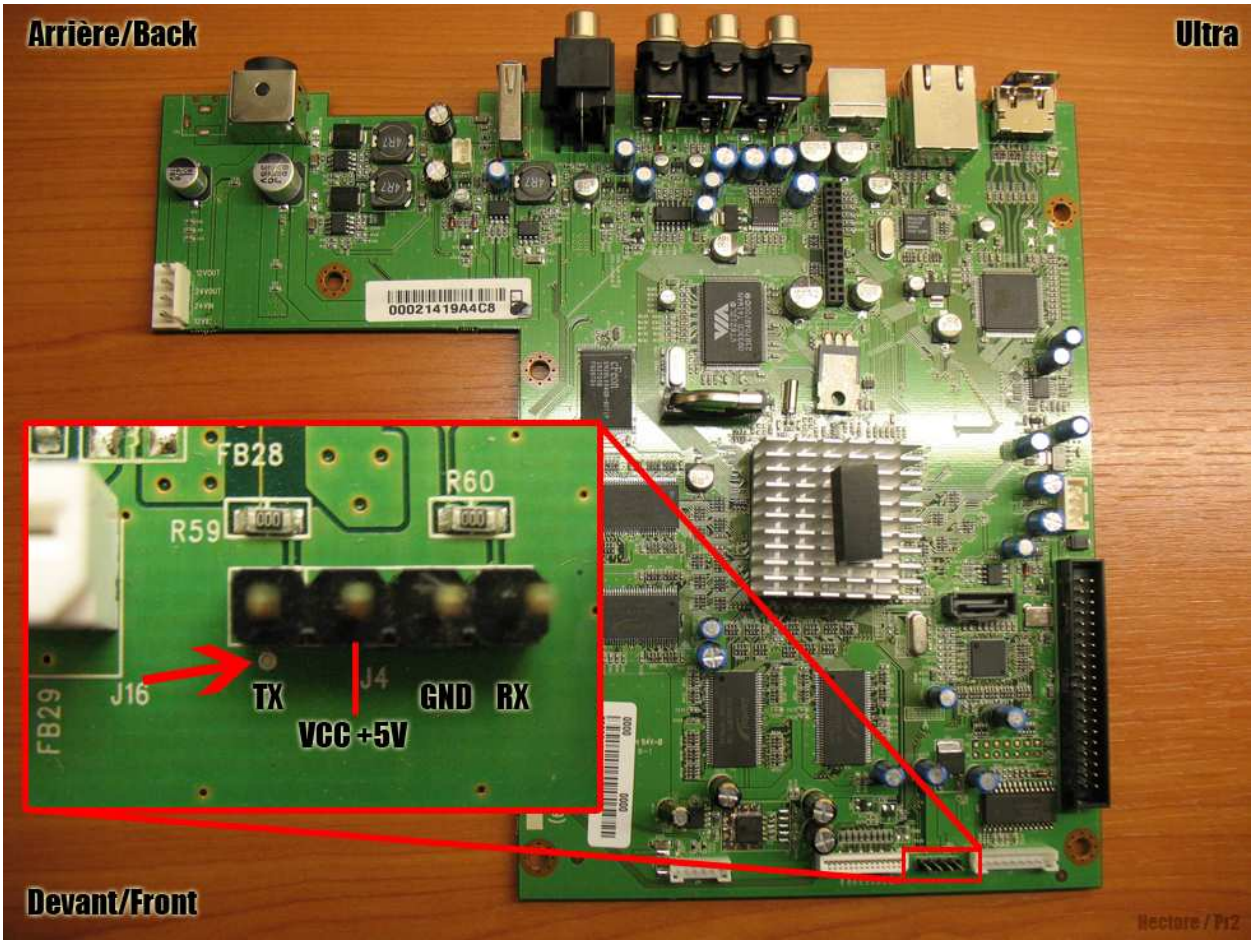
Premium Plus:



Carefully check for the dot on the motherboard it indicates the TX pin of the connector.

Remember that you need to connect this TX pin to the RX of your adapter

Ultra:



Carefully check for the dot on the motherboard it indicates the TX pin of the connector.

Remember that you need to connect this TX pin to the RX of your adapter

Recovery of your Azbox.

Reminded : prerequisites.

You have an USB/TTL adapter and the cable.

You have a terminal emulataor [Putty]

You have a TFTP server running and pointing on the rigth folder on your PC. [Pumpkin or TFTP32]

You know the COM port number associated with your adapter.

Optionally you have connected your Azbox to your PC with a network crossed cable (RJ45). This is what I use to wrote this tutorial.

Your Azbox must be connected to a wired network (RJ45) and your PC must be on the same network.

How to find your PC IP address.

To find your PC IP address you need to press the Start button and in the search field type: **cmd**

then press the Enter key and a black window will appear. Then type:

ipconfig

The result will look like:

```
Ethernet adapter Local Area Connection:

   Connection-specific DNS Suffix  . : home
   IPv4 Address. . . . . . . . . . . :  192.168.1.7
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . : 192.168.1.1
```

The field Ipv4 Adress show up the current IP address of your PC, in the example: 192.168.1.7

For your Azbox, you need to find a free IP address in your network at random between (2 and 253); let say we choose 241, copy the first 3 values of your PC address (192.168.1.) and replace the last value by the one you choosed: 192.168.1.241 and we will test if this address is free:

ping 192.168.1.241

If the answer is:

```
Pinging 192.168.1.241 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.168.1.241:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

You can keep this value, it seems to be free on your network.

But if the answer is:

```
C:\>ping 192.168.1.241

Pinging 192.168.1.241 with 32 bytes of data:
Reply from 192.168.1.241: bytes=32 time=6ms TTL=64
Reply from 192.168.1.241: bytes=32 time=5ms TTL=64
Reply from 192.168.1.241: bytes=32 time=6ms TTL=64
Reply from 192.168.1.241: bytes=32 time=3ms TTL=64

Ping statistics for 192.168.1.241:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 3ms, Maximum = 6ms, Average = 5ms
```

You need to find another IP address , by choosing another random value (betwee, 2 and 253) and test it again.

Starting Recovery process.

To follow and understand this tutorial you have to keep in mind that in the example below:

The PC IP address is 192.168.168.10 (to find or to define has static IP)

The Azbox IP address is 192.168.168.20 (to be define by yourself)

You will need to adapt the value according to your local LAN. Or you can also assigned temporarily a fixed IP address to your PC: 192.168.168.10

Step 1: starting Putty and the serial connection

Power off your Azbox with the back switch and connect the cable carefully inside your Azbox and the adapter in your PC.

Start Putty.

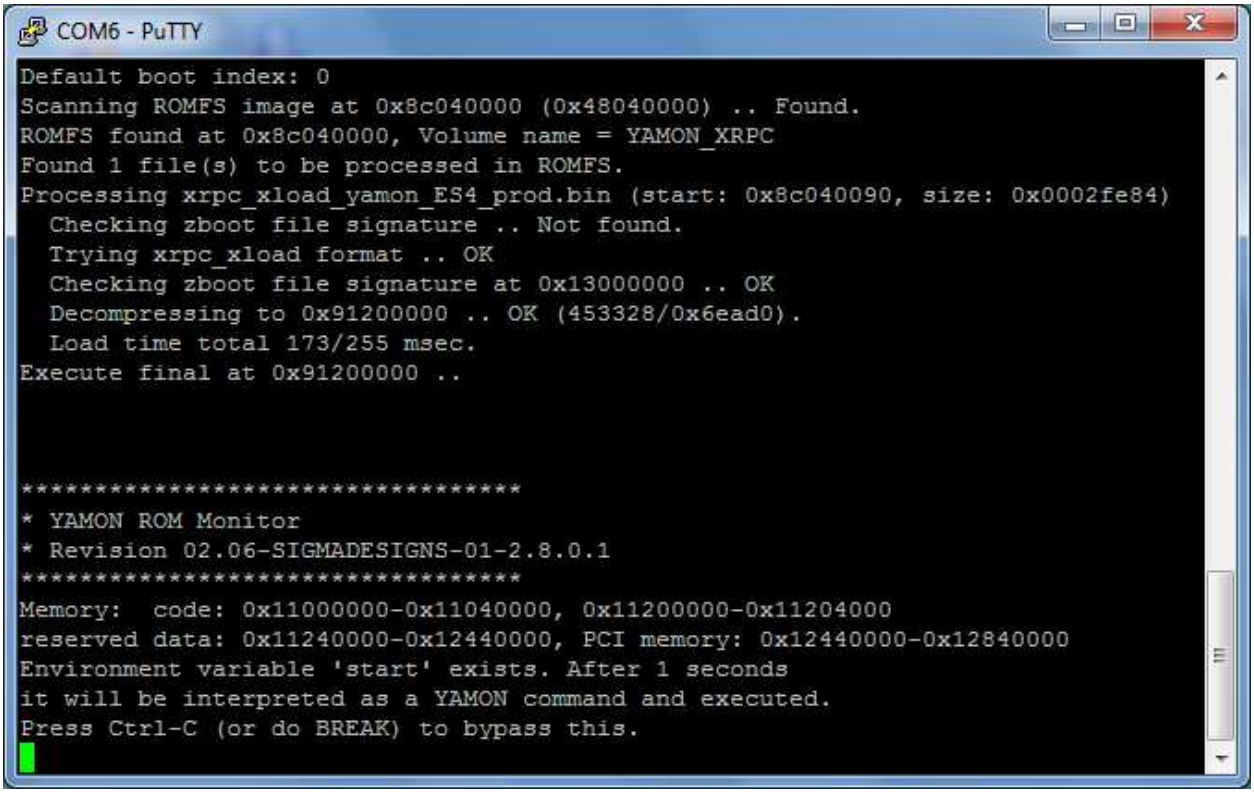
You need to:

- Select Serial
- Define the Serial Line: COM6 (this can be different for you (see before on how to find it))
- Speed: 115200 (be care full by default it is 9600 this is not the right speed, so you need to change it).

Press the Open button of putty the switch on your Azbox (Power On) with the back switch.

Step 2: connection to Yamon

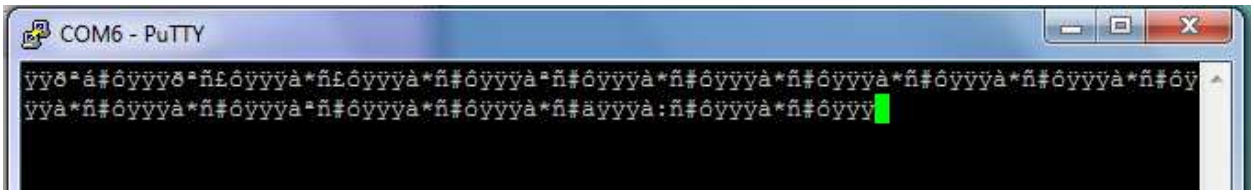
You will get a windows looking like:


COM6 - PuTTY
Default boot index: 0
Scanning ROMFS image at 0x8c040000 (0x48040000) .. Found.
ROMFS found at 0x8c040000, Volume name = YAMON_XRPC
Found 1 file(s) to be processed in ROMFS.
Processing xrpc_xload_yamon_ES4_prod.bin (start: 0x8c040090, size: 0x0002fe84)
Checking zboot file signature .. Not found.
Trying xrpc_xload format .. OK
Checking zboot file signature at 0x13000000 .. OK
Decompressing to 0x91200000 .. OK (453328/0x6ead0).
Load time total 173/255 msec.
Execute final at 0x91200000 ..
****
* YAMON ROM Monitor
* Revision 02.06-SIGMADESIGNS-01-2.8.0.1
****
Memory: code: 0x11000000-0x11040000, 0x11200000-0x11204000
reserved data: 0x11240000-0x12440000, PCI memory: 0x12440000-0x12840000
Environment variable 'start' exists. After 1 seconds
it will be interpreted as a YAMON command and executed.
Press Ctrl-C (or do BREAK) to bypass this.

Be carefull at some stage Yamon will do a small pause (see screenshot above), it is time to press **Ctrl-C** to stop the boot process.

Tip: if nothing happens on screen you probably didn't cross TX and RX in your cable carefull check it, or cross then and test..

If you have this kind of result;



You didn't select the right speed at 115200 in Putty, start again and correct the speed.

You should get a prompt:

```
YAMON>
```

If the boot process continue, power off / power on your Azbox to start over.

And press as fast as possible the Ctrl-C keys when the message is displayed.

If it still fails, I would advice that you carefully check your cable or change your adapter.

Technical remark:

If you see nothing in Putty, please check carefully that the cable between the front panel and the motherboard is connected. The Azbox refuse to boot if it doesn't detect the VFD.

If your Azbox only display this in Putty:

```
xosPe0 serial#afb47efe68cceef4f95c03f6bf65836f subid 0x50
xenv cs2 failed
xenv cs3 failed¡øpower supply: ok
dram0 ok (8)
zboot (1) failed
```

This procedure cannot help you, you need to send back your Azbox for repair.

Etape 3: Disabling of « Hardware acceleration »

We will check if your AZBox don't have hardware acceleration enabled.

To do this type the following command at the YAMON>: prompt:

setxenv

Result will be like this:

```
YAMON> setxenv
(0x00)   4 a.avclk_mux 0x00000000
(0x00)   8 a.board_id "852-E2"
(0x00)   4 a.cd2_freq 0x05b8d800
(0x00)   4 a.cd4_freq 0x01fca055
(0x00)   4 a.cd5_freq 0x017d7840
(0x00)   4 a.cd6_freq 0x01312d00
(0x00)   4 a.cd7_freq 0x01312d00
(0x00)   4 a.chip_rev 0x86340086
(0x00)   4 a.enable_devices 0x00021ace
(0x00)   4 a.gpio_data 0x76000000
(0x00)   4 a.gpio_dir 0x76000038
(0x00)   4 a.gpio_irq_map 0x20090820
(0x00)   4 a.hostclk_mux 0x00000100
(0x00)   4 a.irq_fall_edge_hi 0x00000000
(0x00)   4 a.irq_fall_edge_lo 0x0000c000
(0x00)   4 a.irq_rise_edge_hi 0x0000009f
(0x00)   4 a.irq_rise_edge_lo 0xff28ca00
(0x00)   4 a.pb_cs_config 0x000e0040
(0x00)   4 a.pb_def_timing 0x10101010
(0x00)   4 a.pb_timing0 0x10101010
(0x00)   4 a.pb_timing1 0x00110101
(0x00)   4 a.pb_timing2 0x105f1010
(0x00)   4 a.pb_use_timing0 0x000003f4
(0x00)   4 a.pb_use_timing1 0x000003f3
(0x00)   4 a.pb_use_timing2 0x000003f8
(0x00)   4 a.pcidev1_irq_route 0x01010101
(0x00)   4 a.pcidev2_irq_route 0x01010101
(0x00)   4 a.pcidev3_irq_route 0x02020202
(0x00)   4 a.pcidev4_irq_route 0x02020202
(0x00)   4 a.scard_5v_pin 0x00000001
(0x00)   4 a.scard_cmd_pin 0x00000002
(0x00)   4 a.scard_off_pin 0x00000000
(0x00)   4 a.uart0_baudrate 0x0001c200
(0x00)   4 a.uart0_gpio_data 0x00000000
```

```
(0x00)   4 a.uart0_gpio_dir 0x00000000
(0x00)   4 a.uart0_gpio_mode 0x00007f6e
(0x00)   4 a.uart1_baudrate 0x00002580
(0x00)   4 a.uart1_gpio_data 0x00000000
(0x00)   4 a.uart1_gpio_dir 0x00000000
(0x00)   4 a.uart1_gpio_mode 0x00007f6e
(0x00)   4 a.uart_console_port 0x00000000
(0x00)   4 a.uart_used_ports 0x00000002
(0x00)   4 l.cs0_size 0x00000000
(0x00)   4 l.cs1_size 0x00000000
(0x00)   4 l.cs2_part1_offset 0x00000000
(0x00)   4 l.cs2_part1_size 0x00020000
(0x00)   4 l.cs2_part2_offset 0x00020000
(0x00)   4 l.cs2_part2_size 0x00020000
(0x00)   4 l.cs2_part3_offset 0x00040000
(0x00)   4 l.cs2_part3_size 0x00040000
(0x00)   4 l.cs2_part4_offset 0x00080000
(0x00)   4 l.cs2_part4_size 0x00680000
(0x00)   4 l.cs2_part5_offset 0x00700000
(0x00)   4 l.cs2_part5_size 0x00100000
(0x00)   4 l.cs2_parts 0x00000005
(0x00)   4 l.cs2_size 0x00800000
(0x00)   4 l.cs3_size 0x00000000
(0x00)   4 x.boot 0x00020000
(0x00)   4 x.csf 0x00000002
(0x00)   4 x.d0.cfg 0xf34111ba
(0x00)   4 x.d0.dl0 0x000a4444
(0x00)   4 x.d1.cfg 0xf34111ba
(0x00)   4 x.d1.dl0 0x000a4444
(0x00)   4 x.ds 0x00020080
(0x00)   4 x.dt 0x00000001
(0x00)   4 x.mux 0x00000701
(0x00)   4 x.pll3 0x01020057
(0x00)  42 y.start "xrpc 0xac080090; load zbf 0xb3000000; go"
(0x00)   3 y.startdelay "1"
(0x00)   4 z.boot0 0x00040000
(0x00)   4 z.boot1 0x00080000
(0x00)   4 z.boot2 0x00040000
(0x00)   4 z.boot3 0x00080000
(0x00)  16 a.build_date "TD210:20090123"
(0x00)  31 a.linux_cmd "mem=108m console=ttyS0,115200"
(0x00)  19 a.eth_mac "xx xx xx xx xx xx xx xx"
(0x00)  16 y.bootserver "192.168.168.10"
(0x00)  16 y.ipaddr "192.168.168.20"
```

If the value of x.pll3 is equal to 0x01020057 [**4 x.pll3 0x01020057**]

Then **continue to step 4, there is nothing special to do.** Hardware acceleration is not enabled on your Azbox.

If it is not the case, the value of x.pll3 is probably: 0x01020065 [**4 x.pll3 0x01020065**]

In this case type the following command:

```
setxenv -b x.pll3 0x01020057
```

Result:

```
Original value: 0x01020065, New value: 0x01020057
Updating XENV block at 0x48000000.
.
XENV verification OK.
```

Then restart your Azbox and start again to follow this tutorial.

Step 4: Enabling Azbox network Interface

Then type the following commands at Yamon prompt YAMON>:

setenv ipaddr 192.168.168.20

setenv subnetmask 255.255.255.0

setenv gateway 192.168.168.1

For each command, Yamon will reply with:

```
Updating XENV block at 0x48000000.
.
XENV verification OK.
```

To initialise the network, type the command:

net init

Example of command result:

```
YAMON> net init
Ethernet driver for EM86XX (v1.0)
(MAC xx:xx:xx:xx:xx:xx, tx_desc/rx_desc = 16/32)

em86xx_eth::open(em86xx_eth) - Full-duplex mode
em86xx_eth::open(em86xx_eth) - 100 Mbit/s
em86xx_eth ethernet start
ipaddr:     192.168.168.20
subnetmask: 255.255.255.0
gateway:    192.168.1.1
```

Enabling network:

net up

Result:

em86xx_eth ethernet start

Checking the connectivity:

ping 192.168.168.10

Result:

YAMON> ping 192.168.168.10
64 bytes ICMP-ECHO-REPLY user data received from 192.168.168.10

It is alright you can continue the process.

If you get the following result:

YAMON> ping 192.168.168.10
....
Error : No response from ping server
Hint : Check remote host IP or var's 'ipaddr', 'gateway' & 'subnetmask', or try command "net down"/"net up"

You network configuration is not correct, you need check carefully all your parameters and also double check that you have **disable your PC Firewall**.

It is useless to continue if this basic test fails.

Step 5: Loading and starting Rescue Linux

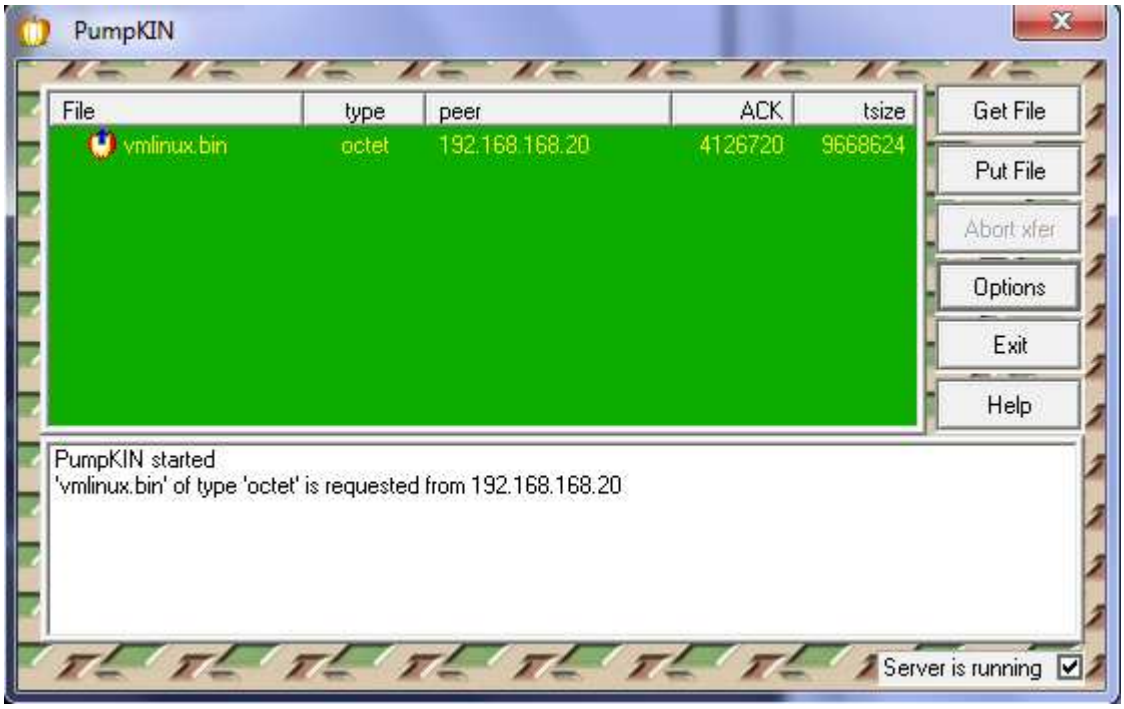
Type the command:

load -b tftp://192.168.168.10/vmlinux.bin 0x90020000

The result of the command is:

```
About to load tftp://192.168.168.10/vmlinux.bin
Press Ctrl-C to break
.....................................................................
.....................................................................
.....................................................................
.....................................................................
.....................................
Start = 0x90020000, range = (0x90020000,0x9095880f), format = BINARY
Length = 0x938810 (9668624)
Checksum = 0x2254194d
```

On your TFTP server (PumpKIN)



You can stop PumpKIN on your PC.

If your Azbox cannot connect cannot connect to your TFTP server, please check the settings and ensure that your Firewall is disabled.

When this is done, you need to type the command:

go

Result:

```
YAMON> go
em86xx_eth ethernet stop
Linux version 2.6.22.19-19-the_ripper (root@debian) (gcc version 4.3.2 (Debian 4.3.2-1.1) ) #185
PREEMPT Mon May 31 16:44:40 CEST 2010
Configured for SMP863x (revision ES6+/RevA+), detected SMP8634 (revision ES9/RevC).
Detected CPU/System/DSP Frequencies: 300.37/200.25/300.37MHz
SMP86xx Enabled Devices under Linux/XENV 0x48000000 = 0x00021ace
 BM/IDE PCIHost Ethernet I2CM I2CS USB PCIDev2 PCIDev3 SCARD
Valid MEMCFG found at 0x10000fc0.
.....
EXT3-fs: recovery complete.
EXT3-fs: mounted filesystem with ordered data mode.
insmod: can't read '/MMP/modules/2.6.22/llad.ko': No such file or directory
insmod: can't read '/MMP/modules/2.6.22/em8xxx.ko': No such file or directory
===> Starting vsftpd...
AZBOX login:
```

Etape 6: Connecting to the Rescue Linux

Then you will get a login prompt: type root (if you are prompt for a password it is azbox)

AZBOX login: **root**

```
login[700]: root login on 'ttyS0'
AZBOX[~]$
```

Be carefull: if your Azbox is connected to a network with a DHCP server, your Azbox will have received an IP address.

The command: **ifconfig**

You will find it:

```
eth0      Link encap:Ethernet  HWaddr xx:xx:xx:xx:xx
          inet addr:192.168.1.9  Bcast:192.168.1.255  Mask:255.255.255.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:228462 errors:0 dropped:0 overruns:0 frame:0
          TX packets:218317 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:23883754 (22.7 MiB)  TX bytes:20516512 (19.5 MiB)
          Interrupt:46
```

Look for the value: inet addr: so you will get your Azbox IP address, in this example it is 192.168.1.9.

If you don't have a DHCP server or if you use a crossed cable, we will set a fixed IP in your Azbox.

Type:

ifconfig eth0 192.168.168.20 netmask 255.255.255.0 broadcast 192.168.168.255 up

We will check again if this work:

AZBOX[~]$ **ping -c 5 192.168.168.10**

```
PING 192.168.168.10 (192.168.168.10): 56 data bytes
64 bytes from 192.168.168.10: seq=0 ttl=128 time=1.943 ms
64 bytes from 192.168.168.10: seq=1 ttl=128 time=0.654 ms
64 bytes from 192.168.168.10: seq=2 ttl=128 time=0.481 ms

--- 192.168.168.10 ping statistics ---
3 packets transmitted, 3 packets received, 0% packet loss
round-trip min/avg/max = 0.481/1.026/1.943 ms
```

Stop the ping wih: Ctrl-C.

If you didn't get this result, you have a connection problem between your Azbox and your PC.

Step 7. Transferring the recovery files

We will send the recovery files to our Azbox.

With your favorite FTP client (for example: FileZilla) connect to your Azbox IP 192.168.168.20 (or the one received from your DHCP server and retrieve with ifconfig, in the example 192.168.1.9).

Transfet the file: ***backup_kernel*** to the folder ***/MMP*** of your Azbox

And the file: ***update*** in the folder ***/tmp***

Those files are in the /Files folder provided with this tutorial package.

With putty (always connected via serial adapter):

Type the commands:

cd /tmp

chmod a+x update

Step 8. Starting recovery

./update /MMP/backup_kernel

Be carefull the above command start with a dot ./update

Result:

```
INFILE: /MMP/backup_kernel , OUTFILE:/dev/mtdblock4
Progress O
Progress 1
Progress 3
.....
```

Wait for the end of this process, the Azbox will restart automatically.

You are safe! Your Azbox is back with his original bootloader and you can upgrade your Azbox to the official firmware by following the normal process (patch.bin on the root of an USB pen). But in the Upgrade screen select: 4. Format Application Area followed by 1. Upgrade usb.

Don't forget to enable again your Firewall on your PC.

Pr2